Why We Have Soap

by Jane Thomson

Put a little oil and water into a screw-top jar and shake it hard. Then stop shaking and watch through the glass.

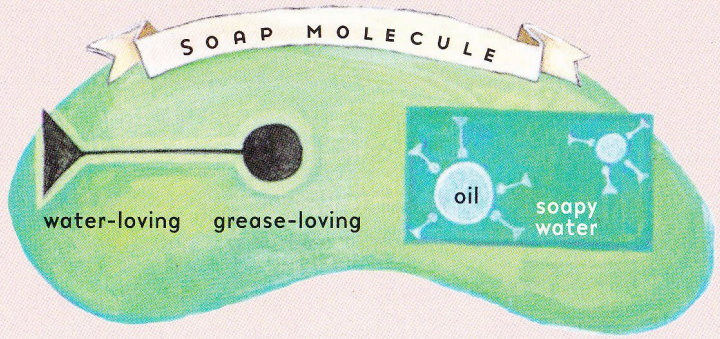
First you will see the oil break up into tiny bubbles. When you stop shaking, you will see the bubbles changing into streaks. Then the streaks of oil join together to form a layer on top of the water.

An old saying is "Oil and water don't mix."

Now put a little liquid soap or detergent into the mixture and shake it up again. What difference does this make?

After you add the soap or detergent, the mixture will be quite different. When the soap froth has settled, you will see that the oil has broken up into tiny bubbles that stay floating in the water.

What actually happens?



A bit of soap is full of millions of little chain-like structures. (The scientific name is "molecules".) Each chain has a water-loving end and a grease-loving end. When you shake up oil in soapy water, the water-loving ends of the chains in the soap stick to the water, and the grease-loving ends stick around each little bubble of oil. The molecules of soap keep the bubbles of oil apart, and so they stay floating in the water.